CHAPTER 2

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LINUX Using Essential Tools

2.1 Getting Started with Linux commands

using the CLI is essential for a linux Administrator.

pwd -> Print working directory
whoami -> it shows the current user name
ls -> list all the files and directory
ls -l -> list all the files in long form
ip addr show -> it helps us to show the ip address of the system
(IP is the main and addr is the sub command)
free -> it tells us that how much memory is available us in Byte
free -m -> it tells us that how much memory is available us in MegaByte
df -> disk free it tells us that different storage devices in byte
df -h -> It helps us to tell the different size and storage device by in human readable format.
cat /etc/hosts -> it shows that the all hostfiles
findmnt -> it shows the mount fileSystem in a very nice way (Tree Structure format)

LINUX 2.2 Working with the Base Shell

Bash is the default shell and provided several useful features

- Tab command completion

- history
- ! <history number>
- ! <short letter> it will run last command of the starting with the short letter.
- ctrl + R -> search the command in reverse order in history

- piping output of first command and input for second command
- ps aux | less (pager less)
- ps aux | wc (word count)

- redirection to transfer the output to the other
- ls > my_files.txt
- whoami > ls_files
- append
- ls >> lsfiles
- cat < lsfiles
- ls esdjgh 2> errors
- ls sdgso 2> /dev/null (it means output will goes no where)

- environmental variables
- env it shows the environmental variable
- env | less
- LANG=fr_FR .utf-8
- ls --help | less
- env | less
- LANG=en_EN.utf-8

- alias
- alias h=history
- unalis h

- Scripts

LINUX 2.3 Understanding I/O Redirection and Pipeing

CMD need the input as the STDIN and gives the output as STDOUT
file < cmd > filename

STDERR
2 > errfile

2.4 Using I/O Redirection and Pipeing

Redirection uses STDIN, STDERR and STDOUT to work with command input and output in a flexible way :

- >
- >>
- 2> /dev/null
- <

Stdin ----> CMD ----> Stdout
file < > filename
Stderr goes to terminal itself by default
2 > errfile

In piping, the STDOUT of the first command is used as STDIN of the second command

- **ls /etc > etcfiles**
- **who** It shows all the users that are currently have a connection to this system
- **who > etcfiles**
- **ls >> etcfiles** it append the output
- **grep -R student /etc** it will search or filter all the student in recursivily
- **grep -R student /etc 2>/dev/null** help us not showing any error message it will goes to nowhere
- ls -l /etc
- ls -l /etc | wc
- ls -l /etc | less
- ls -l /etc | grep host

LINUX 2.5 understanding the Linux file System Hierarchy

- **FHS** directory usage on linux is highly standardized
- Standard directories are defined in the FHS, which is maintained by linux foundation
- The starting point is the root directory
- Different devices may be integrated in the FHS by using mounts.

- / mounted /dev/sda2
- /boot mounted /dev/sda1
- /home server: /home
- /var mounted /dev/sdb

- cd .. previous directory
- cd home directory
- ls -l long list
- ls coloured
- \ls not coloured

- cd /boot it contains all the files which are required at the time of the booting and vmlinuz-4.18.0-32.el8.x86_64 is the linux kernel, the heart of the operating system which interact with the hardware on your computer is the 8MiB file

- cd /dev it is for devices like nvme0n1 or /sda or /dev/null

- cd /etc this is for configuration files and in this directory you will find many readable configuration files.
- eg : cat passwd
- eg : cat redhat-release the current version that are you using
- eg : cat os-release gives the information of the version you are using

- cd /home it is for the normal user directory.

- cd /usr It stores where all your binaries are there.
- eg : bin normal binary
- eg : sbin system binary

- cd /var it is used for writing or storing the dynamic data or log files or web pages
- cat /var/log/messages
- less /var/less/README

- man hier it describe the the hierarcy of the files mounted.

LINUX 2.6 Using man

man is the best source to get extensive usage information

- section define command types
- **man man**
- we can also find any word by using **/** in the vim editor or press **N** for finding the next element.
- section first -> This is executable programs or shell commands, these are the command that you would run as an ordinary user without any root privilages.
- section five -> if is for configuration files
- section eight -> that is for system administrator that need root privileges.
- man lvcreate(8) press G to move down of the page or gg to move up of the pages
- search for word use /
- -A, --almost-all short notation and long notation.

- **man lvcreate**

LINUX 2.7 Finding the right man pages

- **man -k userg** if it give output as a nothing appropriate then it means that mandb doesn't exist
- su -
- man man
- man mandb it create or update the manual page index caches
- mandb help us to update the mandb
- man -k user
- man -k user | wc
- man -k user | grep 8

LINUX 2.8 Understanding Vim

Vim is a improved editor of vi
Vi is the default editor for such long time
Vim is the default editor, and is used as embedded editor by many cmd.
nano is also a editor
vi is not user friendly but Vim is a user friendly.

- Start vim
- command mode
- enter the insert mode
- press a for append mode
- press i for insert mode
- press o for open a new line
- press insert for insert mode in vim
- insert mode
- press esc to go back to the command mode
- to exit with the vim press :wq

LINUX 2.9 Using Vim

vim command overview

- ESC
- i, a
- o
- :wq
- :q!

- adding a new line press **o**
- to save and exit press **:wq**
- to exit only press **:q!**

- dd **to delete a line**
- yy **to copy the line**
- p **to paste the line**
- d$ **move to the end of the line**
- 0 **for start of the current line**
- G **for the end of the vim page**
- gg **press for move the starting of the vim page**

- u **press this for undo**
- ctrl + r **press for redu**
- v **for visual mode**
- /text **for searching the text**
- ?text **for serching the text in reverse**
- **^ move to starting of the current line**
- **$ move to the end of the current line**
- :%s/old/new/g **subsituate and g for global**

LINUX 2.10 Using Globbign and Wildcards

- ***Globbing is a shell feature that helps matching filenames***
- ***not to be confused with regular expression, which helps finding the text patter.***
- ***man 7 glob***

- **ls host***
- **ls ?ost**
- **ls [hm]ost**
- **ls[!hm]ost**
- **ls script[0-9][0-9]**

- **touch script{ 0 .. 100 }**

LINUX 2.11 Using Cockpit

To start with cockpit

systemctl enable --now cockpit.socket
localhost:9090

now you are on cockpit interface then you login it.

- system
- logs
- storage
- networking
- accounts
- services
- applications
- diagonotic reports
- kernel dump
- SELinux
- software update
- subscription
- terminal

THANK YOU